

Macdonald College Library APR 26 1968

THE
DEPARTMENT OF WOODLOT MANAGEMENT
MACDONALD COLLEGE
AND
THE MORGAN ARBORETUM ASSOCIATION



MACD
HIST
QK479
M3

His Excellency, Pierre Dupuy in the
Morgan Arboretum

ANNUAL REPORT
to MAY 31st, 1967

*Presented by Mrs. L. S. Johnson
March 65*

MACDONALD COLLEGE LIBRARY

MORGAN ARBORETUM ASSOCIATION
AT MACDONALD COLLEGE, P.Q.

Executive Officers, 1966-67

Hon. President:	Dr. Vernon E. Johnson
Hon. Director:	Col. Garnet M. Strong
President:	Dr. F. A. Harrison, Vice-President Woodlands, Canadian International Paper Company
Vice-President:	Mr. T. R. Lee
Sec.-Treasurer:	Mr. W. C. Shipley, Registrar, Macdonald College

Directors — Morgan Arboretum Association

Mr. Lowell Besley	Dr. F. A. Harrison
Dr. R. I. Brawn	Dr. Louis G. Johnson
Dr. W. H. Brittain	Mr. T. R. Lee
F. B. Common, Q.C.	Mr. J. B. Morgan
Mr. S. H. Dobell	Mr. Robert Raynauld
Dean H. G. Dion	Dr. H. Rocke Robertson, Principal
Mr. J. W. Fries	Col. Hugh M. Wallis
Mr. John A. Fuller	

Staff — Department of Woodlot Management

W. H. Brittain, Ph.D. (Cornell), D.Sc. (U.B.C.), B.S.A., LL.D., F.A.I.C.,
F.R.S.C., Scientific Adviser.
A. R. C. Jones, B.Sc.F. (Tor.), M.Sc. (Syr.), Associate Professor and
Chairman.
J. D. MacArthur, B.Sc.F. (U.N.B.), Assistant Professor and Curator.
J. R. Bider, B.Sc., M.Sc., Ph.D. (Montr.), Assistant Professor, Wildlife
Biology (Huntly-Drummond Fund).
R. A. Lord, B.Sc.F. (U.N.B.) Research Forester, resigned March 1st, 1967.
Miss M. E. Munro-Kerr, Office Manager.
Miss J. A. Olive, Steno-Secretary.

Staff — Arboretum

R. J. Watson, Foreman
G. S. Martin, Technician
H. R. Brevoort, Woodsman
R. M. Irwin, Nursery Superintendent
R. Magill, Technician
Bradley Ross, Woodsman
Gene Goundrey, Forest Technician, Huntingdon County — May 1st, 1967.

The DEPARTMENT OF WOODLOT MANAGEMENT MACDONALD COLLEGE

It is a pleasure to present some details of the years activities to the membership. The report which follows covers the period June 1, 1966 to May 31, 1967.

Membership

After the Annual Meeting last year it was planned to increase the number of educational benefits from Association membership. It is felt that this has been, in part, accomplished by the forwarding of current literature published by staff on the Arboretum pertaining to woodlot forestry and wildlife management matters. It is to be further implemented by the publication of a small Guide Book to the Arboretum as part of our Centennial programme. This guide is to be distributed to the members and available for sale to visitors at the gate. The twenty-two page book is now in press and will soon be sent to all members of the Association. It is hoped that such a "self-guided tour" booklet will be helpful to all those visiting the Arboretum. Numbers established on the ground near the main road system identify points of interest which are briefly described in the guide book. It will be available in both English and French and, with the brochure sent out last year and the maple syrup booklet published this spring, was designed and illustrated by Mr. Jim Watling.

At the end of this year membership stands at 788 individuals and families, 38 corporations and Associations, 20 Honourary members and a total of 84 new members in all categories. Considering the recent increase in dues, individual membership growth has been satisfactory. The interest of the many individuals and corporations in the work of the Association through their dues, their time and effort has resulted in continuing growth of the enterprise. In particular, the contribution made to the Association's activities by President Fred Harrison and the substantial financial support provided by the Canadian International Paper Company are gratefully acknowledged and sincerely appreciated. You will be pleased to know that Dr. Harrison's active work on behalf of conservation in Canada, has been rewarded by his receiving the Quebec Carling Conservation Trophy, as the outstanding conservationist in 1967. This trophy was presented to Fred at the Sportsman's Show by the Quebec Wildlife Federation last March. The citation read in part, as follows:

"This trophy is recognized as one of the outstanding honours that can be bestowed on a Quebec sportsman. Presented annually by the Quebec Wildlife Federation, the Carling Trophy was awarded for the first time in 1956, with the object of honouring the person who, according to the judges contributed the most to the conservation of the forest, wildlife, soil, and waters of the Province of Quebec.

The presentation of the 1967 trophy to Fred Harrison, Vice-President, Canadian International Paper Company, will add to the series of numerous honours bestowed upon him over the years, in recognition of his active participation in different phases of conservation in the Province. He is particularly noted for the tireless and effective work that he has always devoted to the organization

and operation of a wide network of conservation associations at both the provincial and national levels.

Mr. Harrison without any doubt is one of our leading specialists in the area of the development and improvement of the forest resource. Since 1926, the year he joined Canadian International Paper Company, he has risen through the Company to be nominated Vice-President, Woodlands in 1960 and on April 30, 1965 he became a member of the Administrative Council.

Fred Harrison is also President of Miramichi Lumber Limited; Vice-President and Director of the New Brunswick International Paper Company; a member of the Senate of the University of New Brunswick; Director of l'Association des Industries Forestières du Québec; Director of New Brunswick Forest Products Association; an active member of the Chamber of Commerce of Canada and the Chamber of Commerce of the District of Montreal.

In recognition of his valuable services, Fred Harrison has already received honourable mention for his devotion to forest conservation by the Canadian Forestry Association when a joint meeting with representatives of the American Society of Foresters was held in October 1961 in Minneapolis, Minnesota.

After 35 years in forest operations, Fred Harrison has moved into the realm of research and administration. He is a former President of the Laval Forest Research Foundation and since 1961 President of the Morgan Arboretum Association, Macdonald College of McGill University. In 1959, he was awarded an honorary Doctorate in Forest Research by the Senate of Laval University."

Previous winners of this prestigious award, known to the membership, are the Honorary President of the Association Vernon E. Johnson and Director Robert Raynauld. Very hearty congratulations to Fred Harrison on the recognition of his valuable contribution to resources conservation in Quebec.

It is impossible to mention all those who have given generously of their time and efforts to forward the undertaking, but I would like to thank Robert Raynauld for the very active interest and assistance he has provided so willingly this year. He has worked most effectively with the Public Relations Committee and his continuing and enthusiastic support of the Association is greatly appreciated. You will also be pleased to know that because of his hard work on behalf of conservation he has recently been elected to the post of President of the Canadian Forestry Association. I would also like to thank all the Directors for their co-operation during the past year and, in particular, Tommy Lee for his interest and enthusiasm in the position of Vice-President. Their assistance, guidance and interest in our affairs is most gratifying. It is hoped that membership in the Association helps to impart a feeling of responsibility for the spread of conservation information and the wise use of renewable natural resources of the nation, from the example set in the Morgan Arboretum.

It would also be appreciated if any irregularities that appear to be inconsistent with the Arboretum general policy of protection of the natural environment could be reported immediately to the foreman, Mr. Watson, or the Curator, Professor Dan MacArthur. The large area and wide ranging interests of visitors and others make it extremely difficult to patrol the area efficiently and the interest and support of the member-

ship in this matter would be greatly appreciated. This spring periodic police patrols have been instigated in order to control unauthorized visitors and protect the area for the enjoyment of the membership. It is expected that these policing duties will have to be continued.

There is a growing need for every individual to become better informed and alerted to what is happening in our urban surroundings. This communication of awareness is of growing importance as more and more people grow up in the shadow of the city without any experience or knowledge of the country or of wise land use. Urban-reared individuals are generally quite ignorant of the principles of land use that were second-nature to their forefathers. They must be taught the concept of respect for the land and the important principles of conservation. This can only be done by providing outdoor educational experiences in land-use and conservation close to the large population centres. Schools and training areas for this purpose, must be established before it is too late — that is, before another generation is spawned completely ignorant of the elementary principles of respect for the outdoors and all that this entails. Because of the challenge and existing conflicts in the changing educational pattern little consideration has been given to conservation education, or its importance. There is a great deal to be done in this important area by our school systems, if this devastating lack of knowledge of intelligent land-use is to be corrected.

Ittis writes in *Science*, 1967, Volume 156 (3775):

"Recently, in San Francisco, I heard two symphonies, Roger Sessions' cacophonics followed by Beethoven's melodies. And why did I prefer Beethoven? Because it is like a sunny day on Cape Cod compared with downtown New York. I don't know whether Dobzhansky has forgotten what it was like to walk the dunes in solitude or to swim in the ocean, but to most humans, as products of natural selection, it is pleasanter than basking in 5 p.m. traffic on Fifth Avenue. Man will never become genetically adapted to technological society and remain human. Even if he could adjust genetically to this disbiological change, a biological and cultural absurdity would result.

Blind faith in the ecological good sense of man has dug graves for many human societies. Long before the problems which geneticists fear become realities, the population explosion will have destroyed those very qualities of nature to which we, as vertebrates, mammals, and finally as humans, have become adapted through 200 million years of natural selection. The most precious values of man, the enjoyment of life and of living, will then cease to have meaning for *Homo postsapiens*. He will end as a species which has devoured its evolutionary mother, with a culture which has lost its biologic roots. Beethoven and Shakespeare, like flowers and hummingbirds, wild geese, and the free human spirit, will be incomprehensible curiosities."

It is gratifying to see the increased use of the Arboretum by outdoor enthusiasts among the members this past year, particularly the large numbers of families using the Arboretum trails through the winter. Obviously the trail clearing and maintenance programme is appreciated. So far, to my knowledge, only one family has actually got lost, fortunately only temporarily. Also under the heading of "membership" (non-pay-

ing) mention should be made of the wildlife that are co-operating in making use of the area. A nesting great horned owl delighted bird watchers, Arboretum staff and numerous 4H and youth group visitors during May. The fact that this wilderness loving bird chose to nest literally inches from the Arboretum main road speaks wonders for her faith in the forbearance of the membership and confidence in the management.

Staff

Staff changes this year resulted in Miss Jennifer Olive adding her cheery and attractive personality to the hardworking office staff. She has made a valuable contribution to the work output and in helping to expedite the answers to the great number of queries and requests the Department receives on everything from diseased plant identification to what one has to do to hatch an ostrich egg. Miss Mary Munro-Kerr has capably taken on Ruth Abbott's job of office manager and continues to do an excellent job in organizing the orders for the plant sale and attending to the many complex details relating to the Association. It is unnecessary to add that Miss Abbott's presence has been missed, particularly, her wise counsel in matters affecting her lifelong interest in all things pertaining to the area known to her as "Morgan's Woods". Fortunately we do see her on occasions and recently she wrote up a section of the Guide Book that deals with the Senneville Bird Sanctuary.

Professor Dan MacArthur has been most active this year in his triple capacity as Professor of Woodlot Management, Curator of the Morgan Arboretum and editor of Woodlands Review, a trade journal serving the pulpwood logging industry and the Canadian Pulp and Paper Association. He has also published some research results of the field trials in the Morgan Arboretum. Three professional articles were published in various issues of the Forestry Chronicle, (see publications list attached), and numerous technical articles for Woodlands Review. These last involve field visits and interviews with people in the forest industry across the country. Professor MacArthur also writes the monthly editorial in this journal. I wish there were space to print all the thought-provoking editorials that have appeared in that journal during the past year. Several of these editorials have been picked up by other news media and used as background material to highlight seminars and workshops. For example, the August 1966 editorial, entitled "The Double-Bitted Challenge", stresses that forestry and recreational use of the forest must be compatible and must be part of a forester's training and pervade his thinking if he is to become a modern and effective land manager.

"UNLESS FORESTERS ACCEPT the challenge of management for new forest uses, often not associated with wood extraction, their place of leadership may be taken by a new breed of land managers who recognize values in landscape that transcend the stumpage values of trees growing upon it."

THE FOREGOING is one man's view and there may be some truth in it. But the implication that foresters, through ignorance, or lack of imagination, or greed, or cast-iron mindedness are willfully barring the door to lebensraum must be challenged. The growing tendency to make us scapegoats is deplorable.

THE MODERN FORESTER who moves with the times knows full well that the public will enjoy the recreational values of the forest whether he likes it or not. He has made a significant start in arranging a compatible, if uneasy, marriage between forestry and recreation. Contrary to what many people seem anxious to believe foresters are not less aware of the natural values than other men.

FOR THE FORESTER, however, the situation is not as simple as for others, because he understands too much. He realizes how much more we must learn if we are to keep our forests producing wood to earn recreational dollars and at the same time make possible the rewarding expenditure of recreation dollars in the forested areas. If this is to be achieved, the people on both sides will have to be prepared to learn and to accept challenges." (Editorial, Woodlands Review, August 1966).

In a May editorial Professor MacArthur, with 12 years research experience with the Federal Department of Forestry in Quebec as background, emphasizes that we must have more forest research *now* if we are to meet the projected four fold increase in demand for wood by the year 2000;

"EVERYBODY IN THE ACT

DEMAND PROJECTIONS by informed people indicate that in the foreseeable future the Canadian forest industries will run short of wood. From that moment on any expansion of the raw material supply can only be by means of more intensive management. With this realization, it suddenly becomes clear that many answers, or research results, are needed to mount and sustain into the uncertain future, the necessary management effort.

RESEARCH RESULTS are needed to help solve a vast complex of inter-related problems. Silviculture, sociology, mechanics, fertilization, genetics, data processing, meteorology, pedology — these and many more are involved.

WHEN RESEARCH is called forward to provide the answers for the generally recognized problems of today we may be disappointed. But it must be remembered that forest research has not been in business long enough, or in a big enough way, to have the answers to today's problems, let alone those of twenty years hence. Forestry will be well advised to take the results research can provide and share the blame, if there is blame, for the shortage.

BUT FROM NOW ON everyone will need to be research-minded. The active researchers will need all the suggestions, constructive criticisms, and moral and financial support the non-researchers can promote. It will take a major effort to build a forest research force capable of dealing with our present and future problems. There is no time to lose. The mature trees of the future are already growing or missing." (Editorial Woodlands Review, May 1966).

Dan has also published an article and an editorial in the recent Woodlot (February 1967) issue of the Macdonald Farm Journal. These are being circulated to the membership. He presented an excellent paper at the Annual Meeting of the Canadian Institute of Forestry at Banff in

October entitled "Forest Management on the Small Forest Property". This paper has also been circulated to the membership and was recently published in the Forestry Chronicle. This impressive publications record has resulted in his receiving a research grant from the Federal Department of Agriculture to pursue studies on the silviculture of a young sugar maple stand to assess its potential for growth and sap production. This project was commenced a year and a half ago, without funds, in the hope that it would soon be possible to get support. Fortunately, this hope has been realised. Professor MacArthur has also made numerous broadcasts on maple, woodlot and reforestation subjects to Quebec farmers with the assistance of the Extension Department's broadcasting service. Besides carrying on his duties as Curator and instructor in Woodlot Management, he has been active in: an Expo tree sale operation last fall; organizing the surplus plant sale to the organization of membership this spring; the conduct of a wood supply operation for the Wickheim Timber Shows performed at Ile La Ronde four times daily. This latter operation has meant a substantial contribution to the Arboretum income account for wood and services rendered, and requires wood deliveries to the Expo site two nights a week.

Professor MacArthur has also spoken at four high school career nights on "Forestry as a Career" and continues to conduct numerous bi-lingual, scientific and youth group tours of the Arboretum. As if this were not enough he has also been largely responsible for the preparation of the forthcoming Guide Book.

Professor Roger Bider has just completed his second year with the Department, and has survived a heavy teaching and research schedule with additional undergraduate students registered in Wildlife Biology and the Ecology and Conservation courses. New courses in the Department which are his responsibility supported by the Huntly-Drummond Fund. He has also been responsible for the supervision of a graduate student in the Department of Entomology, Paul Thibault, who is majoring in the wildlife field. This has added a further burden to his course load. In addition many of the General Biology option students chose fish or wildlife 4th year projects which involved considerable consultation with Dr. Bider. He is also called on to answer frequent requests and questions with respect to various wildlife management and conservation problems that come up during the year. For example: the unexplained dying-off of Hungarian partridge near Dorval Airport noted in early March which he examined with Dr. Swales, initiating a study of the plant foods available at this time to this introduced game bird; the whole seal harvest question, to which he himself and some of his students gave reply; and many other questions related to fish and wildlife biology. These are only some of the projects that call for immediate action and his presence here has certainly added considerably to the expertise with which the Department is able to handle such varied and perplexing problems. Dr. Bider's National Research Council grant has been expanded so that he is now in a position to employ four students in his community ecology studies at Lac Carré, now in their seventh year of progress. He has also received an Extra Mural Research grant for research in Newfoundland, which involves a study of small rodent activity in relation to insect predation. This work is being supported by the Department of Forestry and Rural Development. He has also published articles and one of his papers, "Trout Production and

Leasing Policies in Quebec" has been circulated to the membership. He also has several technical papers in press. He should be congratulated on having received his Doctor of Philosophy degree from the University of Montreal last September, following the successful defence of his thesis at that institution.

Dr. Brittain has been pursuing his *Betula* studies with his usual vigour. He also maintains his keen interest in both the development of the Arboretum and its use as a demonstration area. He spent a good part of August on the Island of Grand Manan in the Bay of Fundy making extensive birch collections there. The island, according to him is a birch collector's utopia! Grand Manan appears to have a great gathering of the common Maritime species of *Betula cordifolia* and *papyrifera* and their hybrids. He has also published two more papers on his *Betula* studies and another is in press in co-operation with Dr. Grant. Dr. Grant has received a renewal of his Extra Mural Research grant from the Department of Forestry and Rural Development for further study of the cyto-genetics of birch based on Dr. Brittain's material. Dr. Brittain himself has also received a National Research Council grant for *Betula* studies this year. It is gratifying to know that the powers that be are now recognizing the importance of this work with two substantial grants for its continuance.

The undersigned, while on a personal canoe trip on the Coppermine River in the Northwest Territories last summer, made two collections of birch specimens to add to Dr. Brittain's impressive collection. One hybrid dwarf birch was collected on the East shore of Point Lake while the party was pinned down by a polar gale. The only tree-size (18 feet) specimen of birch observed during the entire canoe trip was collected on the Northwest shore of Point Lake deep in the central Barren Grounds. It was seen from the water growing in a sheltered draw, half-way-up a steep cliff. It stood out above the dwarf spruce, birch and alder that had also colonized this somewhat more hospitable site in that generally inhospitable terrain. Although this latter specimen did not prove to contain any viable seed, a single juvenile seed catkin was obtained as a complete specimen for the herbarium collection. It was of interest to note that the one sport fishing camp met with on this journey was flying in white birch cordwood cut near Yellowknife, 200 miles to the south, for fish smoking purposes to enable their clientele to preserve their catches — a further use for birch in Canada's treeless tundra.

Mr. Lord resigned his position as research forester with the Department in February to take on a new job as Extension Forester with St. Francis-Xavier University in Nova Scotia. Dick has been with the Department since June, 1964 when he commenced a survey of woodlot owner attitudes in Soulanges and Huntingdon counties. This research was supported by an Extra Mural Research grant from the Department of Forestry. The findings of the survey have been published in manuscript form entitled, "A Study of Private Forest Land Ownership in Soulanges and Huntingdon Counties — Quebec". It is expected that this publication will serve as a basis for a technical publication in the near future financed by the Forest Economics Research Institute, Department of Forestry and Rural Development. On completion of this work Dick commenced a study of Intensive Woodlot Assistance in Huntingdon County in the fall of 1966. This program is currently sup-

ported by a Quebec-A.R.D.A. grant presented by the Department of Lands and Forests, Quebec, and will be continued by present staff. It is hoped that a forest technician or engineer can be obtained to carry on the detailed field work in the near future. We wish Dick well in his new assignment with St. Francis-Xavier University. His work there consists of providing woodlot assistance to farm woodlot owners in eastern Nova Scotia. Dick's assistance during the 1966 session with educational tours in the Arboretum was missed this spring. To replace him on the educational and sugaring tours we were fortunate in getting the assistance of two men on a temporary basis. Malcolm MacDonald was effective in carrying on this community service project and many school, cub, and brownie groups were given sugar bush tours. Following MacDonald's resignation in mid-April, we were fortunate in getting the services of Bill Fleming for the remaining period of the sugaring season. Both men were most enthusiastic in this work and the 1,472 school children and 58 adults who attended the 32 special outings were also very enthusiastic about the tours they received. This educational effort has grown rapidly in two short years and the assistance provided by the maple industry and the Provincial Government is very much appreciated. This year a small illustrated pamphlet describing the maple industry and the Arboretum's part in it, in both French and English was supplied to all those who participated. A modest income of \$777.50 was received to cover the cost of labour, syrup, guide services and literature distribution. Bob Magill, hired as a technician this last fall, has also done effective work in carrying out the field work of the maple research studies, supervised by Professor MacArthur.

Other members of the staff in the Arboretum — the foreman, Bob Watson, Galen Martin, technician, Harold Brevoort, woodsman, Dick Irwin, nursery superintendent and Bradley Ross, woodsman — have contributed to a programme of service to the membership and the community. Their work and interest in the Arboretum has created a fine tradition for others to follow and materially furthered the aims of the Association.

Mr. Watson can now be addressed as "Trainer of Champions" as the Macdonald Woodsmen Team which he has coached for several years won the North American Intercollegiate Woodsmen Competition against strong opposition from American and Canadian Colleges this past winter. He is to be congratulated on a fine coaching effort and the outstanding performance of the Macdonald College Woodsmen.

Among his many other activities Bob Watson handles security and week-end gatekeeping chores in the Arboretum during the summer months. This year from the first of June, 1966 to May 31st, 1967 a total of 4,738 week-end visitors during the six summer months were counted. This included 492 people who paid .50¢ at the gate plus others who purchased a summer visitor's pass as an alternative to membership. Gatekeeping and security patrol expenses during this period totalled \$405 and actual gate receipts were \$329. The above number of visitors does not include the many educational and individual visits that occur during the week. Members are advised to have their membership cards available so their entry can be expedited, saving embarrassment with the security patrol who may not know them. They are also encouraged to bring visitors to acquaint them with the values of and opportunities for outdoor enjoyment in the area.

Arboretum

The plantings in the native and introduced tree collections last fall and this spring were confined to the establishment of all but a few of the last remaining specimens of white birch. These were planted in the Senneville Field, where the major birch collection is situated and on the avenue or trail near the Chalet, where selected provincial and territorial specimens will form a Confederation Trail once this has been dedicated. Two open spots on the Trail have been reserved for Prime Minister Pearson and Premier Daniel Johnson to plant their respective trees when the 1967 dedication and official opening of this birch collection take place.

Field planting of birches in the Arboretum to build up the living collection of Canadian species and varieties continued in 1967. The following were permanently established totalling 525 trees.

1. Canada Birch Trail; completed by the addition of 39 specimens for a total of 83 specimens.
2. General collection; 311 trees
3. Chromosome specimens; 111 trees
4. Hybrid specimens; 12 trees
5. In Block I after cutting; 52 trees (8 yellow and 44 white birch).

Canada Birch Trail

Since trees are the *raison d'être* of the Morgan Arboretum, it is natural that we should wish to choose some particular tree species to commemorate the centennial of Confederation. Such a tree should possess a number of very special qualities for signaling this historic occasion in an appropriate manner.

First of all, it should be a species known to all throughout the length and breadth of this land. It should also be one of variable character, reflecting alike the wide range of geographical features throughout its range and, symbolically, the ethnic complex of the population. It goes without saying, that it should be a tree of pleasing appearance at all seasons, one possessing actual or potential economic importance and, finally, it should be a tree connected in a special way with some significant episode or period in Canadian history.

It so happens that only a single species completely fulfills all these diverse conditions. That tree is the white or paper birch, also known as the canoe birch. It lines roadsides, lakes and streams, from coast to coast, extends far into the northern territories and even seems to find a suitable niche in every chance break in the northern forest cover. It therefore fits, in a peculiarly appropriate manner, the blazon on our coat of arms, "*A mari usque ad mare*". Moreover, the white birch is everywhere admired for its graceful form, its gleaming trunk, the tender green of the unfolding leaves and for the golden sheen of the autumn foliage. Finally, it is the source of a number of useful wood products and, where hardwood foresting is required, it has been found to fill a useful place.

Finally, the white birch played a significant, though little recognized, role in the early history and development of Canada. Few indeed realize the wonderful system of inland water transportation that existed in this country from the earliest times, all based upon the use of the birch bark canoe. The highway of the voyageurs through the heartland of Canada was also the homeland of the white birch and it was the estab-

lishment of the famous voyageur trail that was an important factor in fixing the boundary between Canada and our Southern neighbour in that particular area.

It was the realization of these facts that led to the choice of this tree as the basis of our centennial project and this choice finally resulted in an avenue of birches representative of each province and territory of Canada. However, before that became a reality, thousands of miles had to be covered in the collection of seed from which the seedlings were later grown; these now form an integral part of the trail.

It now stands as a permanent memorial to a great historic event, and, though it may not compete in size or flamboyance with so many of the splendid and costly memorials that grace Centennial year, it can at least claim the modest virtue of being uniquely appropriate to the particular occasion which we now celebrate. The map below indicates the birch specimens that compose the trail and shows the location in Canada from which each specimen was collected.

For several years an intensive study of Canadian birches has been one of the arboretum projects. Seed collected from all parts of the country has been grown to seedling size and established on permanent sites; a preliminary survey has been completed, the results of which have been published and we are now engaged in a more detailed analysis of the data collected to date. This has been largely a one man effort, carried on mostly without special funds. It is satisfactory to report that the work has now been recognized by a grant from the National Research Council, which will enable faster progress to be made.

Exchanges and Co-operation

Plant material was supplied to agencies and individuals engaged in arboreta development or research work.

- 1) Specimens of 26 species were supplied to the New Brunswick Electric Power Commission for planting in a public arboretum being developed at the Beechwood hydro plant.
- 2) Specimens from twelve of Dr. Brittain's birch collection were sent to Dr. Louis Parrot of Laval University to add to his experimental collection for studies of forest genetics.
- 3) One shagbark hickory was presented to the University of New Brunswick Forestry Association to be planted on the U.N.B. campus by the Forestry Class of 1967.
- 4) Two dozen larch and white spruce were presented to the Boy Scouts of Canada to dress up their Scout Pavilion at Expo '67 on Ile Ste. Hélène.

Woodland Improvement

The major improvement effort in 1966-67 took place in Block I. Approximately 10 acres were cut over under diameter-limit control. The treated stand consisted largely of beech and, as a result of fire in the past, a high percentage of defective trees was found. In effect the cutting was a salvage operation and most of the mature stand was removed. Firewood was the main product but some hemlock pulpwood was also

produced. Hardwood tops were, as usual, cut up for maple sugar production fuel. An estimated 150 cords were produced in this operation.

In April 1967 a special harvesting operation began in connection with a contract to supply wood for chopping and sawing demonstrations at Expo '67 — the Timber Show in the La Ronde area. Some 6,000 board feet of basswood per week are required. This permits the sale at an excellent price of much low quality material. The operation is profitable in itself and also will result in considerable stand improvement, particularly in some of the sugar maple groves where the basswood, which cannot be sold as firewood, was slowing the development of sugar maple.

In conjunction with the basswood cutting for the Expo contract regular stand improvement will be carried out when the crews are working in an area. Particular attention will be paid to sugar maple groves, most of which are overdue for improvement work. This cutting will constitute "institutional-owner" type management — a relatively light harvest consisting largely of low quality material with the accent on what is left rather than what is removed.

Wood Production 1966-67

<i>Location</i>	<i>Species</i>	<i>Volume</i>
Block I	Hemlock pulpwood	17.5 cords.
	Hardwood firewood 18"	105.0 cords
	Hardwood firewood 12"	5.5 cds.
	Sugar wood	30.0 cds.
J.C.N.	Pine and spruce pulpwood	1.5 cds.
	Basswood pulpwood	6.0 cds.

Maple Research and Demonstrations

Maple syrup production at the Morgan Arboretum was excellent in 1967; a year that was below average in many places according to reports. The 1967 season was in many ways different from those of 1966 and 1965. The early March run did not occur and there was only one period — March 6 to March 12 — where sap flow was strong. However, 472 gallons of syrup were produced. This was not much less than the record production of 512 gallons in 1966. Production data for the past ten years permit comparison of years.

Production data — 1958 - 1967

<i>Year</i>	<i>No. of Taps</i>	<i>Gal. of Syrup</i>	<i>Pds. of sugar tap¹</i>
1958	3,251	432	1.22
1959	2,692	278½	0.93
1960	2,488	427½	1.58
1961	2,605	281	0.99
1962	2,626 (150 P/L)	309	1.08
1963	2,871 (480 P/L)	374	1.19
1964	2,793 (911 P/L)	353½	1.14
1965	2,850 (932 P/L)	250½	0.81
1966	2,818 (728 P/L)	512	1.67
1967	3,230 (930 P/L)	472	1.34

10 year average to 1967 369.0

1. Gallons of syrup times 9.2 divided by number of taps.

Once again early tapping using paraformaldehyde pellets in all tapholes was practiced. While there was no advantage in catching an early run of sap in 1967 early tapping gave ample time to have all in readiness when sapflow began about March 24th. The amount of syrup produced is evidence that early tapping is quite possible without danger of "drying up" when pellets are used. In fact, in 1967 sap was still being collected up to April 20 whereas in 1966 the season ended by April 12.

Yields of sap per taphole from two systems of tubing installation; 1) 18-inch drop and 2) non-drop, both with vacuum pumping; were compared in the North Grove. This was a repeat of a 1966 test of the same two systems. In 1967, the drop system again gave the higher yield; 8.1 taphole gallons versus 6.7 from the non-drop system. The results help to confirm the belief that drops permit significantly greater yields. Whether the extra sap is worth the cost of using drops is, however, still debatable.

In the regular test groves an experiment to compare gravity flow yields from 18-inch, 12-inch, and 6-inch drops was conducted. Three comparisons; 1) 18-inch versus 12-inch, 2) 18-inch versus 6-inch, and 3) 12-inch versus 6-inch; were made. Four test groves, 240 trees, and 480 taps were involved in the experiment. Analysis of the yields show that the drop length had no effect on the yield per taphole. While there was great variation between the 10-tree experimental units, and between test groves, there was no evidence that 6-inch drops were not as effective as either 12 or 18-inch.

Drop length test

<i>Drop</i>	<i>Gallons per taphole</i>
18-inch	5.3
12-inch	5.2
6-inch	5.3

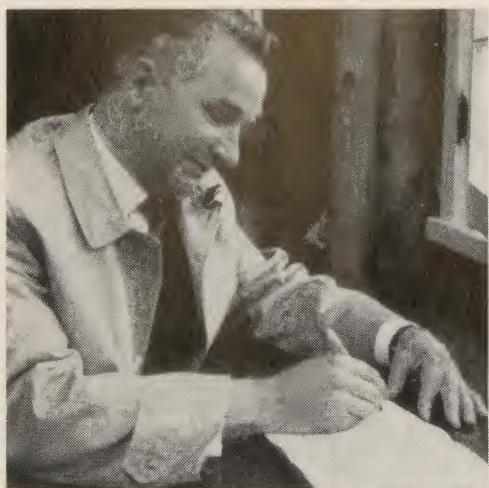
A practical implication of the results is that replacement of the usual 18-inch drops by 6-inch ones to save a foot of tubing per tap is possible.

The squirrels returned to plague the plastic tubing in the North Grove in 1967 and damage was heavy early in the season. With the advent of milder weather their attacks ceased abruptly. This year squirrel activity was watched closely and damage recorded and mapped.

Activity in the maple management project has been less than planned but the initial step of mapping and describing 1,000 potential producers in a stand of young maple has been completed. This project will now move forward more rapidly as a result of a research grant of \$3,600 received from the Canada Department of Agriculture.

Sugar parties in 1967 were not favoured by the weather. On April 5th a special party was held for the Commissioners General of Expo. Although the day was cool and overcast and the footing wet and muddy the guests apparently enjoyed this unusual activity sponsored by the Canadian International Paper Company. It was nice to see some old friends out for this event, among them Vernon Johnson, Honourary President of the Association. Verne came down from his Harrington Mountain retreat for the occasion and to sample our sugar on snow. It is hoped that he will come again soon.

Both the McGill Graduate Society and the Morgan Arboretum As-



Mr. Gosselin signs the Visitors' Book

ACTIVITIES

MORGAN AR



Algerian Commissioner General samples
sugar on snow



Sugar maple plantation, Huntingdon County

IES — 1966-67

ARBORETUM



Tom Quesnel's prize woodlot



4H youth group on Tour



Arboretum wood at Expo

sociation parties were postponed a day on account of rain but attendance was still surprisingly high. The Macdonald College Faculty Club had the good fortune to pick a perfect day. The educational activities centred on the demonstration sugar house went into high gear in 1967. The completion of a second year in this venture of educating school children and other youth groups on the importance of the maple industry to Quebec farmers was most successful.

During the 1967 sugaring season the C.B.C. International Service filmed a television programme on the maple sugar industry for presentation to audiences outside Canada. The successful completion of this project was assisted by Bob Watson who co-operated in fitting his work schedule to the needs of the film crew.

Comité d'Erable

In the early spring of 1966 the Provincial Department of Agriculture and Colonization formed a Comité d'Erable made up of individuals representing the government, industry, the producers, and the universities with the object of studying the most pressing problems of the maple industry in Quebec. This Committee has been chaired by Dr. Bruno Landry, Chief, Division of Horticultural Products and three useful meetings have been held. Our Department together with a member of Laval University, Department of Agricultural Engineering were invited to attend these meetings and the Committee met once at Macdonald College at our invitation. In early April Mr. Jean Guilbault, agronome, was appointed the new chief of maple culture in the Department of Agriculture and Colonization. Mr. Guilbault with Mr. Gerard Blanchard, Secretary of the Comité d'Erable recently visited Macdonald College and the Morgan Arboretum to review our maple research programme; it is gratifying to report that our studies in this field are receiving their earnest attention.

Nursery and Plantations Nursery Work

Demand outran supply for ornamental trees and shrubs with the result that a few orders for the members plant sale could not be filled. About 100 orders were, however, collected by members on May 5th and 6th. Gross returns were in excess of \$2,400.

As in 1966 the weather favoured nursery work this year. Although the sugaring season continued until April 24, the cool wet weather held back plant growth and the trees and shrubs sold were in excellent condition. Furthermore, other nursery work such as transplanting of young stock and consolidation of the stock in hand was favoured by the weather. White birches and larches were again featured and well received in the sale.

Plant sale problems have been reduced thanks to the efforts of the office and field staff and the co-operation of members. We are still faced with the difficulty of having enough specimens of the items listed to fill all requests. This is one problem that probably cannot be solved because of the inherent nature of the members plant sale which does not attempt to do more than distribute surplus material to members in an equitable way.

Work is continuing to produce certain native shrubs and small trees for sale as ornamentals. Species such as blue beech, wild raisin, nanny-

berry, striped maple, and leatherwood, would be good candidates for many landscaping uses but have been largely ignored in favour of imported stock. Seed is being collected and sowed in the Arboretum nursery with a view to producing a supply of these interesting species.

Nursery work is being concentrated in the Johnson Corner Nursery, to improve efficiency of all operations. It has been necessary to enlarge the main nursery (J.C.N.) to include part of the area formerly occupied by the red pine plantation. Many of the red pines were sold for landscaping and the poorer trees were profitably converted into boughs and pulpwood.

Reforestation

In recent years the reforestation effort has been largely devoted to the field planting of white birch collections. The objective is to develop a living collection consisting of a number of specimens from each of the collections made by Dr. Brittain in the course of his Canada-wide study of white birches. Work has progressed reasonably well with the establishment in 1963 of the Canada Birch Trail which was finally completed in the spring of 1967.

Other small projects include planting a few specimens in the Arboreta and a small scale reforestation trial with yellow birch, and white birch from Summerland, B.C. These were planted in Block I where openings had been created by heavy cutting in a beech stand where most of the trees were defective.

Plantation Management

Christmas tree production continues on an experimental scale and shearing of Scots' pines, where required to produce good quality trees, was pursued. One Christmas tree plantation has yielded a number of trees for sale.

The Christmas sale in 1966 was expanded to include maple syrup in addition to Scots' pine and spruce Christmas trees, pine boughs, and white birch fire wood bundles. Gross returns were \$4,616.00 distributed as follows.

<i>Item</i>	<i>Number</i>	<i>Revenues</i>
Christmas Trees		
Scots pine	711*	\$2,861.00
Spruce	164**	\$ 568.00
		<hr/>
		\$3,429.00
Pine boughs	512 bundles	\$ 512.00
Firewood	109 bundles	\$ 109.00
		<hr/>
		\$4,050.00
Maple syrup	73 gallons	\$ 566.00
		<hr/>
		\$4,616.00

* 201 unsheared and 482 sheared trees were purchased and 28 sheared trees were cut in the Arboretum plantation.

** All spruce came from Arboretum plantations.

Diversification increases returns with little extra effort and offering different types of trees is essential to meet the desires of customers. Unsheared Scots pine was well received and spruce purchasers, although a minority, were convinced that spruce was what they wanted. Bough and wood sales are slowly increasing from year to year. The sale of boughs is particularly important because, in addition to being profitable, it permits intensive management of pine plantations for high quality products. This is also true of spruce Christmas tree sales which cover the cost of early thinning.

Winter Injury

The 1966-67 winter was not marked by the usual extremes of temperature. As a result the snow cover built up gradually and was never greatly reduced by mild weather until spring. Consequently winter damage directly caused by climate was insignificant. Some damage was caused by mice and hares feeding on bark and twigs. A concentrated attack by hares on flowering crabs and Toba hawthorns in the Johnson Corner Nursery rendered most of them unfit for sale. A few small birches were also damaged by rodents.

Plantation research

1) With the formal publication of a paper on the wetlands planting experiment this project entered upon its second phase — the accumulation of data on performance as a basis for further publication.

2) The 15-year old European larch-Norway spruce plantation is being studied and a paper on performance to date is being prepared. Results in other exotic larch plantings in the Arboretum may also be included.

Wildlife Management Programme — Huntly-Drummond Fund

Our second year at developing wildlife studies within the Department of Woodlot Management has been fruitful in the fields of academic instruction and research.

From an academic point of view the number and interest of students taking Wildlife Biology has increased so dramatically that we have had to institute a field laboratory period of one week prior to the actual start of classes. This year's laboratory will take place at Lac Carré, Quebec, where a number of graduates and undergraduate students are currently doing research projects. It is hoped that the genuine enthusiasm and work habits of our field researchers will rub off on our undergraduates during this field laboratory period.

Four more graduate students have been added to our wildlife roster as of May 1st. Three of the students are doing their projects at Lac Carré, Quebec. Mr. Denis Vernier, an N.R.C. scholar for 1966-67, is working on several ecological aspects of the varying hare. To date only one paper has been published on the hare in Quebec and it is time somebody undertook this task. Mr. Laurent Pellerin, also an N.R.C. scholar for 1966-67, has initiated studies on the woodland jumping mouse. This is numerically the most common mouse in the research area, and to date extremely little work has been done on this animal, although it is found over a large part of Eastern North America. Mr. Yvon Côté is undertaking his research programme on brook trout in one of the major streams which runs through the Lac Carré research area. Oddly enough this is another area of research which has been generally neglected even though

large numbers of trout streams are found in Quebec. Mr. G. Weary of Macdonald College is working with our graduate students and doing his fourth year project on the ecology of snakes. The fourth new M.Sc. student is Mr. Raymond Sarrazin who has worked for Dr. Bider over the past two years. This experienced student will head the shrew project in Newfoundland this summer, assisted by Mr. E. Agunbiade of Macdonald and Mr. G. Castonguay of Laval University. Mr. Paul Thibault, a Q.A.R.C. scholar, is entering his final M.Sc. year. He has finished his field work and is now working on the preparation of his thesis on the influence of a stream on the terrestrial community. This summer Mr. Thibault is doing a preliminary study for crop damage caused by raccoons for the Quebec Department of Agriculture. This work will be continued next spring when he will have completed his M.Sc. requirements.

In addition to the courses in Wildlife Biology and Conservation and supervision of the graduate programmes, six 4th year General Biology students did their final year projects on the problems of fish, birds or mammals and required close supervision from Dr. Bider.

Over the past year we have been working on two wildlife projects within the Arboretum itself. The squirrel damage to plastic tubing which we had hoped would get under way with support from interested industry was held up by the lack of a sponsor who backed down late last fall. This spring we recorded damage which was much heavier than last year and were able to predict when it would end. If the assumptions on which we based our predictions were right we should have the problem solved next spring. This could save thousands of dollars in time and materials for those people in the maple industry who are using tubing or who are discarding it because of unsatisfactory results and unexpected damage from this source.

The second research programme which has been under way for two years is a population study of the painted turtle in Stonycroft pond in the Arboretum. This type of study will continue for many years before a good estimate of the population, size, longevity and age structure are obtained. So far some 40 turtles have been tagged and measured and it is estimated that there might be as many as 75 turtles in this pond at any one time.

This spring we have been fortunate in receiving two grants for research. A \$5,000 N.R.C. grant supporting our field work and graduate programmes at Lac Carré, and \$7,800 in the form of an Extra Mural Research Grant from the Department of Forestry and Rural Development to support shrew investigations in Newfoundland.

To aid the development of this burgeoning research programme new space has been requested in the basement of Stewart Hall adjoining the Canadian Institute of Forestry Offices. This additional space, although not completely adequate should provide space for existing graduate students. A laboratory for 30 undergraduate students who take vertebrate zoology is still required and it is hoped that this space will be provided when the new Biology Building is constructed.

Teaching Programme and Adult Education

Four courses for Degree and Diploma students in Agriculture were organized again this year with very satisfactory results, in that no failures were recorded for the first time on record. Several seminars were

held in the Ecology and Conservation Course invited lecturers were Sandy Griswold, Conservation Authorities Branch in Ontario, and Constable J. St. Pierre of the R.C.M.P. Wildlife Protection Branch. During the fall term weekly use was made of the Arboretum for outdoor laboratory exercises. Two field trips were made to the Harrington Forest Farm through the kind co-operation of the Canadian International Paper Company. These field trips and outdoor laboratories are essential parts of the training given in the Department and provide an opportunity for the student to relate his theoretical knowledge to practical field problems.

An invited seminar on "The Potential for Private Forestry in Eastern Canada" was presented by the undersigned to graduate and undergraduate students of the Department of Geography at the University of Waterloo in November. That Department is moving rapidly into the field of Resource Management and Planning and it was stimulating to have an opportunity to discuss Canadian resource developments with this very active group of specialists.

The Diploma students, in addition to their regular courses in Farm Forestry, have the option of carrying out a field exercise in woodlot management on the home farm. This year Tom Quesnel of Huntingdon and Roger Vizbar of Franklin Centre were selected as dual winners of the Vernon E. Johnson Woodlot Award for the best executed projects. Both winners elected to carry out a stand improvement cutting in a young mixed hardwood stand by thinning one acre and leaving an adjoining acre unthinned in the same cover type as a control. The uncut control serves as a guide to compare the results of thinning the treated acre. Both woodlots were well treated and these cuttings will improve their future growth and development. Hard hats and winter liners were presented to the winners courtesy of Levitt-Safety Equipment and a cheque, courtesy of the Canadian International Paper Company. This is the eighth year that this award has been made and the sponsoring companies are to be congratulated on their continuing support of this contest.

In adult education the woodlot forestry conservation evening course was held in the Physical Sciences Centre at McGill this fall. Twelve lectures covering tree identification, protection, silviculture, reforestation, water conservation, landscaping, wood measurement, wildlife and woodlot management and marketing subjects were presented by members of the staff. A special lecture by Roger Lacoste, Q.C. covering legal matters affecting land owners was included this year. This appeared to be well received and of interest to the twenty students registered. Field trips for this adult group were arranged to visit the Morgan Arboretum, the Harrington Forest Farm and the Southern Canada Power Company Forest Tree nursery and plantations. A repeat of the evening course in Woodlot Conservation is scheduled to be held this fall on the Macdonald College Campus commencing Thursday, October 5th.

Through the expertise of its staff the Department maintains a continual consulting service for visitors by telephone and by correspondence to deal with the daily flood of requests for assistance and information from land owners on topics associated with resource management in particular identification, shade tree problems, forestry and wildlife. We are also indebted to other members of the staff at Macdonald College who have assisted us in this never-ending task. Particular mention should

be made of the assistance of Mr. Jim Watling, Dr. Dorothy Swales, Dr. Vickery, Dr. Morrison and Dr. Estey, Dr. Grant, Dr. MacKenzie and Professors Broughton and Cooper, Mr. Gerald Webb, Mr. Arthur Lamprecht, Professor Murray, Mr. Gyapay, Walker Riley and Galen Driver and other members of the Extension Department, Dick Cornish, Miss Stewart, Miss Heidl and Mrs. Banting, Mr. Wright and Mr. LeCorney for their continuous co-operation in dealing effectively with Arboretum and visitors' operational problems, lectures, field trips and tours and the many other events, publications and outings held or planned during the year. Their specialists' knowledge has also been provided on many occasions to deal with many troublesome matters that landowning members bring to our attention. It is also with regret that we note the early retirement of Harry Best for health reasons. Mr. Best was former General Foreman of Buildings and Grounds.

The Department has also been conducting an active programme of general field trips and tours through the Arboretum for visiting scientists, teachers, school, scout and guide groups interested in conservation, biology, geography and related disciplines. This year, if possible, the tempo has increased and the demands on the staff are even greater than usual. Over 100 4-H Forestry French-speaking students visited the last week-end of May. Professor MacArthur toured this group as the outing was a reward for successful completion of a competition staged by the Jeune Association Forestière Québécoise. A group of science teachers from the West Island Regional School Board was given a tour this spring with a view to demonstrating the possibilities of using the Arboretum for outdoor teaching, from Grades 1 through 10 on a regular basis. This development has resulted from the interest shown by Mr. Maddock and Mr. Jared, consultants to the Regional School Board.

Members of the Department have attended many meetings and conferences dealing with renewable resources during the year. Our staff attend these conferences because of their competence in the field being discussed and to keep informed on new developments and trends. Notable among these meetings were; the Northeastern Forest Tree Improvement Conference at the University of Toronto (Professor MacArthur read Dr. Brittain's paper on Birch which will appear in N.E.F.T.I.C. proceedings), Woodlands Section, Canadian Pulp and Paper Association, Summer Conference at New Richmond, P.Q., the Annual Meeting in Montreal and the Forest Management Conference at Deep River and Petawawa; Canadian Institute of Forestry Annual Meeting at Banff; Laval University Forest Research Foundation symposium on Forest Mensuration at Quebec; Laval Faculty of Forestry symposium on multiple-use Forest Management; Rouge Valley Association Annual Meeting at Arundel; Canadian Tree Farmers' Association Annual Meeting and the Canadian Forestry Association meeting in Ottawa; Conservation Council of Ontario; Conference on Parks, Wilderness and Outdoor Recreation in Toronto; l'Association Forestière Québécoise Annual Meeting in Quebec; Arundel School Conservation night (Professor MacArthur gave an illustrated talk on forestry in Scandinavia); Canadian Institute of Forestry Champlain Section field trips; Northeastern Wildlife Conference in Quebec; Montreal Anglers and Hunters Annual Meeting in Montreal; the Quebec Wildlife Federation Annual Meeting; 14ième Congrès Annuel de l'Association des manufacturiers de Bois de Sciage du

Quebec and le Congrès Annuel des Producteurs de Sucre d'Erable du Québec in Quebec; Camping Promotion and Conservation seminars in Montreal; career nights at high schools in Montreal, Huntingdon and Rigaud and Farm meetings of the Quebec Farmers' Association and the Southwestern Quebec Protestant Settlement Society in Franklin Centre and Director's meetings of the Canadian Tree Farmers' Association; the Montreal Anglers and Hunters Association; the Finance and Forest Management National Committees of the Canadian Institute of Forestry and the Quebec Provincial Council of the Boy Scouts of Canada. The undersigned also spent 2 days last fall assisting the E. B. Eddy Co. with the management of their freehold forestland in Pontiac County.

Woodlot Assistance in Huntingdon County

This research has been progressing favourably although it suffered a setback when Dick Lord resigned in March. The undersigned and Professor MacArthur have been filling in the gaps since Dick left. It has also been possible to engage the services of Gene Goundrey a graduate of a Forest Ranger School, and resident of neighbouring Chateauguay County. It is expected that with the assistance of this forest technician the important field work will proceed rapidly. The following report outlines some of the progress of the project to date but does not mention several meetings held with various farm organizations and Womens' Institutes in the county and the plans for more of this type of contact work in the future;

"The 1965-66 Annual Report of the Association reported on a study of farm woodlot ownership and management in south-western Quebec. The report concluded that, particularly in Huntingdon County, much could be done to increase the role that the woodlot could play in the overall farm enterprise.

Within the past year or two a new approach to farm forestry has been introduced in many parts of the country. Ontario, Quebec, New Brunswick and Nova Scotia have all undertaken programmes designed to offer increased assistance to woodlot owners. In some cases provincial government foresters are advising owners on the proper management techniques and practices; in others, direct assistance is available in the form of marking timber to be cut and the provision of a free tree planting service. Payment of subsidies for woodlot improvement work carried out by the owner is another form of assistance recently inaugurated in Ontario.

The Huntingdon study is another example of this approach. It is designed to help the owner with 10 acres or more of woodlands to obtain greater benefits from his woodlot and to find the most profitable markets for his products.

Underlying this project is the idea that the woodlot must be considered as an integral part of the total farm enterprise. When field crops fail to produce expected yields, or an apple crop is unsatisfactory, the modern farmer attempts to find the cause. He turns to the agricultural specialist to find a remedy. Now the same sort of help is available to the farmer who wants to improve his woodlot yields. The Huntingdon assistance programme, is designed to provide a similar service. In consultation with the owner a programme is drawn up to effectively meet his objectives.

Work in Huntingdon got underway in mid-summer following support of the proposal by Quebec-A.R.D.A. The initial step was to publicize the programme as widely as possible in the county and to invite interested owners to participate. This is continuing through contact with the various farmers' associations in the county. At the same time the co-operation of the agronomes and farm organizations in the county has been requested. Their interest and support of the programme is hereby acknowledged.

As responses from interested owners were being received another phase of the operation got underway. This involved a detailed survey of potential markets for woodlot products. All known mill operators, and purchasers of sawlogs and pulpwood located within a 50-mile radius of the county were visited and information on species, quantities and prices obtained. The results of this market survey are available to co-operators to help them find the best market for their products.

During the fall of 1966, contact with some of the owners who had expressed an interest in the project was commenced. Initially these visits served to acquaint the owner with the details of the programme. In some cases the owner was interested in some specific problem related to the woodlot; more often the discussions centred around the place of the woodlot in the farm economy, and the extent to which it forms a part of the enterprise. The next step involves a general inspection of the wooded areas of the farm and the preparation of a plan of management to fit the owner's interests. The type of plan developed varies widely from owner to owner. Once all owners have been provided with this initial service more detailed work will be undertaken.

The programme is also concerned with various aspects of sugar bush management and reforestation. The purpose of the project is to undertake a co-operative management programme to increase woodlot production and assist the owners to find the most profitable market for their woodlot and sugar bush products. Woodlot owners who are interested in further details regarding the project should contact either Professor MacArthur or the undersigned at Macdonald College. This assistance has been available to selected owners in Huntingdon county since June, 1966. The programme has been undertaken by the Department of Woodlot Management at Macdonald College with financial support provided by Quebec-A.R.D.A. namely the Quebec Department of Lands and Forests and the Federal Department of Forestry and Rural Development."

Public Relations Committee

Under the guidance of Fred Harrison the public relations committee continued its activities with the object of publicising more widely the work of the Association and attracting more corporation and individual support for its aims and objectives. Two meetings were held during the year, the first one in July following the annual meeting. Plans were laid at that time to prepare for a suitable centennial celebration ceremony in the Arboretum and to attract leading political figures to the event. Initially these plans resulted in an invitation to the Honourable Claude Gosselin, Minister of Lands and Forests to open officially the demonstration sugar house during National Forest Products Week in September.

"Le Quart de Rond" — trade journal of the Quebec Lumber Manufacturer's Association reported the event as follows;

"La visite de l'Hon. Claude G. Gosselin, ministre des Terres et Forêts, au Morgan Arboretum, était l'une des manifestations au programme du Comité de Montréal, pour la célébration de la Semaine de la Forêt de 1966.

Monsieur Gosselin avait comme hôtes le Dr. F. A. Harrison, président de la Morgan Arboretum Association; A.R.C. Jones, directeur de l'arboretum et le doyen H. G. Dion, du Collège Macdonald.

Le ministre a visité les forêts et les pépinières de cet organisme et il a inauguré officiellement une cabane à sucre destinée à être utilisée par des groupes éducationnels. Un imposant groupe de membres de l'association entourait le ministre et l'on comptait aussi, parmi les invités: M. M. Alexandre Babin, de Granby, président provincial de la Semaine de la Forêt de 1966; Bruno Cayouette, président du Comité Montréal pour l'organisation de la "Semaine". Robert Raynauld, président du Conseil d'administration de l'Association forestière québécoise; M. Roland Deschamps, sous-ministre-adjoint au ministère des Terres et Forêts et J. R. Alfred Legendre, directeur du Bureau des Bois de Montréal.

Outre les événements mentionnés précédemment, la cérémonie comportait plusieurs discours d'usage; présentation du ministre des Terres et Forêts à l'assistance par le Dr. F. A. Harrison; remarques de l'hon. Claude-G. Gosselin; remerciements de M. Robert Raynauld — et une réception a terminé le programme de cette importante cérémonie."

The minister appeared to be impressed with his tour of the property, the work underway and the general appearance of the area; and he congratulated the staff and college for the work it was accomplishing in the field of forest conservation. He also mentioned that with his background as a farmer in the Eastern Townships he was well aware of the valuable contribution Macdonald College was making to the agricultural industry in that region.

The second meeting of the public relations committee was held in February and discussions centred on ways and means to implement the Centennial dedication of the Canada Birch Trail. Initially it was hoped that the premiers of each province or their representatives could dedicate a tree from their respective regions. This ambitious plan to be preceded by a letter of invitation describing the project and its purposes:

"Since we realize that you are deeply involved in many weighty matters and face numerous exacting commitments, we are very loath to add to your burdens. However, in this centennial year, we do hope that you may be interested in our own Centennial Project which we believe to have a number of unique features — not least of which is the fact that it has been achieved without benefit of public funds or paid advertising!

The Morgan Arboretum Association is concerned with *trees*, so it is natural that we would wish to memorialize this occasion by choosing a tree that would best reflect the significance of this historic event, viz., a single species of nation-wide distribution and

of variable character, to reflect not only the widely different conditions existing in the geographical regions of Canada, but in a purely symbolic way, to symbolize the ethnic complex of our people. Moreover, it should be one having desirable aesthetic qualities. Fortunately, there is a tree that exactly fits these conditions, and that tree is the Canadian White Birch.

This tree has much stronger claims to be signalized in this our jubilee year, than its mere ubiquity, for it has played a very vital role in the early history of Canada. Indeed, it was the birch bark canoe — strong enough to bundle cargo, light enough to be carried around rapids, that alone made possible the western fur trade and opening up of a pathway to the West with all its attendant consequences, even influencing the fixing of the lines of our southern boundary.

Now, the highway of the voyageurs through the heartland of Canada is the homeland of the white birch. Its gleaming trunk is a familiar sight throughout all our vast domain, even penetrating far to the north to the tip of the Arctic sea. More than any species that could have been chosen, it best fits the blazon on our coat of arms, "*A mari usque ad mare*".

For the past five years birch seed has personally been collected from every nook and corner of Canada, grown to transplanting size and, finally, set out in the Morgan Arboretum at Macdonald College, near Ste. Anne de Bellevue in the Province of Quebec. It is, therefore, our hope that you will feel that this concept and the effort made to realize it, deserves your co-operation. This would consist in your consent to dedicate a selected tree as a special memorial to your province.

Therefore, on Friday the 29th of September — late enough to avoid competition with earlier events and at a suitable time for planting, we propose to dedicate in the Morgan Arboretum an avenue of white birch trees representative of each province and territory to form a "Canada Trail", to serve as a permanent memorial to the occasion. Each such tree would bear a plaque carrying the name of each premier in office at that time.

Naturally, we do not expect that you can commit yourself to anything so far in advance. It would be sufficient for our purpose to receive a "letter of intent", on the understanding that, should it not be possible to attend, you could designate a colleague or senior official for the task of bearing a message of dedication that he could present on your behalf.

We, therefore, will eagerly await your reply and express the strong hope that it may be favourable."

Further consideration of the logistics of the task of getting all the provincial premiers to the Arboretum at any one time decided the Committee that the best plan would be to try and have Prime Minister Pearson and Premier Johnson of Quebec each dedicate a tree. In this way all the Provinces and Canada would be adequately represented and an imaginative, useful and truly lasting scientific endeavour, completed without benefit of public funds, would be memorialized. A small closed-in kiosk describing the details of the Canada Trail would be unveiled on this occasion. It is hoped that this event can be arranged for late September or early October.

The very useful discussions and suggestions put forward by the members of this advisory committee are much appreciated and the time and thought put into these meetings by the various representatives have been invaluable to the development of the Association.

Publications

During the past year, in addition to the many public addresses, guided tours, advisory visits and field trips the members of the Department have prepared and published the following articles;

- Brittain, W. H. and W. F. Grant. Observations on Canadian Birch (*Betula*) Collections at the Morgan Arboretum. III. *B. papyrifera* of British Columbia. *The Canadian Field-Naturalist*, 80 (3) 1966.
- Brittain, W. H. The Role of White Birch in Forestry. *Report of Proceedings*, 14th Northeastern Forest Tree Improvement Conference. 1967. Maple, Ontario.
- Bider, J. R. Parameters of Activity at the Ground Strata of Vertebrate Communities. Ph.D. Thesis accepted as partial fulfilment for the degree of Doctor of Science, University of Montreal. September 1966.
- Trout Production and Leasing Policies in Quebec. *Macdonald Farm Journal*. 28 (2). pp. 10-11. 1967.
- Jones, A. R. C. The Morgan Arboretum — A Haven from Megalopolis. *Canadian Audubon*. 28 (4). pp. 157-160. 1966.
- A Practical Approach — Private Forest Management in Quebec. *Macdonald Farm Journal*. 28 (2). pp. 5-7. 1967.
- Annual Report Department of Woodlot Management, Macdonald College and the Morgan Arboretum Association. Published annually. pp. 1-27. 1966.
- Lord, R. A. A Study of Private Forest Land Ownership in Soulanges and Huntingdon Counties, Quebec. *Mimeo* of Department of Woodlot Management, Macdonald College, P.Q. pp. 1-122. 1966.
- Experimental Woodlot Improvement Programme Underway in Huntingdon County. *Macdonald Farm Journal*. 28 (2) 1967. pp. 7-9.
- MacArthur, J. D. Comparative survival and growth of five conifer ridge - planted on a wet site. *Forestry Chronicle*. 42 (2) 1966. pp. 143-148.
- and A. C. Blackwood. Taphole sanitization and sugar maple sap yield. *Forestry Chronicle*. 42 (4). 1966. pp. 380-386.
- Forest Management on the small forest property. *Forestry Chronicle*. 43 (1). 1967. pp. 70-74.
- Morgan Arboretum — maple results in 1966. *Macdonald Farm Journal*. 28 (2). 1967. pp. 9-10.
- Pulpwood Marketing Boards are only the Beginning Editorial. *Macdonald Farm Journal*. 28 (2). 1967. pp. 4.
- The Domtar Newsprint freehold forests. *Woodlands Review*. June, 1966.

- MacArthur, J. D. The 19th Woodlands Section, C.P.P.A. Summer Conference: A study in integration from stump to finished product. *Woodlands Review*, August, 1966.
- Mechanization of forest fire detection. *Woodlands Review*, August, 1966.
- Domtar's hot chipping operation. *Woodlands Review*, October, 1966.
- "Under the flags at Banff". 58th Annual Conference C.I.F. *Woodlands Review*, November, 1966.
- The Woodlands Section, C.P.P.A., 1966 Forest Management Conference. *Woodlands Review*, November, 1966.
- Nova Scotia Pulp Limited goes tree length. *Woodlands Review*, January, 1967.
- Integrated Logging in Northwood Pulp operations. *Woodlands Review*, January, 1967.
- First Paper — then lumber as Bowaters Mersey stays buoyant. *Woodlands Review*, Convention, 1967.
- Larose Forest — an experiment in co-operation. *Woodlands Review*, February, 1967.
- Instant forest fire by simulator — fire boss nightmares. *Woodlands Review*, February, 1967.
- First in North Central B.C. — Prince George Pulp and Paper. *Woodlands Review*, March, 1967.
- Winget, C. H. and J. D. MacArthur. Red and Norway spruce underplanting in a tolerant hardwood stand in Quebec. *Woodlands Review*, April, 1967.
- MacArthur, J. D. Twelve editorials for *Woodlands Review — Pulp and Paper Magazine of Canada*. June 1966 to May 1967.
- Staff. Pure Maple Syrup. Booklet prepared by the Department in French and English for distribution to youth groups touring the Morgan Arboretum sugaring demonstrations. pp. 1-7. 1967.
- Morgan Arboretum — Guide Book. A booklet prepared by the Department in French and English for sale to visitors to the Morgan Arboretum. pp. 1-20. 1967.

The majority of the above articles in reprint form are available on request from the Department office.

Special Projects

A special request was made this year to the Honourable Claude Gosselin, Minister of Lands and Forests to obtain financial support for the work of the Department in the Morgan Arboretum. This approach was made in the form of a letter addressed to the Minister and presented in Quebec by President Fred Harrison and Director Robert Raynauld. The letter read as follows;

"Mr. Minister:

Knowing of your interest in the programme of the Morgan Arboretum and the Department of Woodlot Management at Macdonald College following your visit last September, I am encouraged to acquaint you with a few of the details of our farm forestry

research and woodlot programme. This information is submitted with the hope that you might consider the project worthy of financial assistance.

The Morgan Arboretum is first and foremost a study centre for the problems of private forestry with particular attention to those problems connected with the farm woodlot. This primary interest is associated with many other projects relating to the study of the wise use of land for timber production and recreation.

A partial listing of projects is as follows: Specific studies have been carried out and are continuing on various silvicultural methods of managing small private forests and woodlots; reforestation studies of native and introduced softwood, hardwood and hybrid species; trials of promising strains and species of Christmas trees suitable for planting in the Province of Quebec and the development of a Christmas tree seed orchard; detailed tests of maple sap collection, production and processing methods and studies of new techniques of sugar maple management. The assembling of a complete collection of all the native trees of Canada, including a nation-wide collection of white birches and the display and testing of some of this material for ornamental and beautification uses. Outdoor recreation, wildlife management studies and public education activities for youth groups and others in the Montreal Region centred on the Arboretum have been important parts of the programme. The area is also used extensively by undergraduate and graduate students for frequent field exercises and outdoor laboratories. Even more important the Arboretum is used as a base for demonstrating the various methods of managing, harvesting and protecting the woodlot for the benefit of rural land owners. Short courses, field days and half-day demonstrations, mailing out of informational publications on maple, woodlot, wildlife and Christmas tree methods and other resource literature coupled with farm visits as well as telephone and correspondence advisory services has been a continuing free service to any land owner who has asked for help.

All these services have been provided without charge and without solicitation or support from government. It has been done with a public-spirited interest of the need for a greater awareness of the value and importance of our renewable natural resources. The financial support for this wide-range of projects comes as follows: one-fifth from McGill University; one-fifth from the sales of services and products in the form of wood, plants and maple syrup, and three-fifths from corporations mainly forest industry and private individuals, in the form of annual memberships, who have an interest in woodland conservation.

Income for the Department programme of teaching and research for 1966-67 is estimated as follows:

	1966-67
McGill University contribution	\$15,000
Income from sales	\$15,000
Contributions from corporations and members	\$38,000

	\$68,000

Expenditures for salaries, wages and upkeep of the Arboretum and continuation of the programme for the same period 1966-67 is estimated at \$80,125. There has been a recurring deficit between income and expenditure in our programme since 1963. If this continues serious curtailment of the entire programme will be essential.

The project in which we are engaged was undertaken in response to a pressing need. We were aware greater profits from the farm woodlot could only come from a more rational system of management. We know that this required greater knowledge of the subject, which could only come from study and research under the most practical conditions. Furthermore, there did not exist in Quebec or, indeed, in all Canada, the facilities for pursuing such studies comparable to those which exist here and, moreover, we had a staff who were anxious to make a contribution to the vital problem.

Our preliminary efforts have met with such a gratifying response that we feel confident that the correct approach has been made. Our only desire is to be enabled to meet the demands that have developed.

For this reason, we feel justified in respectfully calling this matter to your attention in the hope that you may give sympathetic consideration to our request for an annual sustaining grant of \$10,000 to enable us to prosecute this programme. In doing so we beg to assure you that our entire energies will be devoted to the attempt to deserve your generous assistance.

Dr. Harrison and Mr. Raynauld reported a very sympathetic audience with the Minister. The Hon. Mr. Gosselin recently advised that, because of budget restrictions, he cannot provide any assistance this year but he hopes that it will be possible to provide some support for the work being done in the Arboretum in the next budget year.

Another special project that has been under consideration for more than a year is the proposed gift to the University of a 360-acre estate in the Laurentians by a member of the association. The object of the gift is to continue the development of this well-wooded property for woodlot, wildlife management and conservation uses, teaching and research. Unfortunately as yet funds have not been forthcoming to finance the upkeep or construct modest student quarters that would be necessary to make full use of such a generous gift. A year-round stream flows through the property and two small lakes are contained within its boundaries. It is located on the edge of the Boreal forest. It thus contains important elements of the flora and fauna of the vast northern forest that includes the forested section of the Precambrian shield in Quebec. These northern elements are not found in either the Morgan Arboretum or Mont St. Hilaire which are representative of the deciduous and Great Lakes - St. Lawrence or southern forest regions of the Province. Hence the importance to the University of such a proposal of gift. It is hoped that funds can be found that could finance the maintenance and development of such a potentially useful gift to the out-of-doors teaching and research facilities of the University.

The contributions of all members of the staff in the preparation of this report of the year's activities is hereby acknowledged with thanks.

Their assistance and interest in its compilation is typical of the team effort that has been responsible for the continuing growth and development of the Arboretum and Department.

Yours faithfully,
A. R. C. Jones
Chairman
Department of Woodlot Management

May 31, 1967

Form of bequest

The Directors wish to remind friends of the Morgan Arboretum Association that the financing of the Association's activities is dependent on their generosity to provide funds to maintain and expand conservation in Canada.

It is suggested to those in a position to do so, the addition to their will of a particular legacy in the following form:

"I bequeath to the Morgan Arboretum Association, Macdonald College, as a particular legacy, and free from all succession and death duties of any kind, the sum of \$"

Inquiries concerning bequests, other gifts to the Association, or additional information, should be addressed to:

The Secretary-Treasurer
Morgan Arboretum Association
Macdonald College, P.Q.